Eastern Plating Company, Incorporated

Emergency Preparedness, Prevention & Response: Emergency Action & Contingency Plan

DOCUMENT # EQM-1002

In conformance with:
40 CFR Chapter I, Part 265, Subparts C & D,
Paragraphs 265.30 through 256.56
& 29 CFR 1910.38

Eastern Plating Company, Inc.

CONTINGENCY PLAN AND EMERGENCY PREPAREDNESS & PREVENTION PROCEDURES

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Eastern Plating Company, Inc.

1200 South Baylis St.
Baltimore, MD 21224
Phone (410) 342-4107; Fax (410) 342-0105

Controlled Document:

DOCUMENT CUSTODIAN: MELVIN POLLARD		**DOCUMENT # EQM-1002**
Date Issued:	**Approved by:**	
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RESPONSIBILITY, AUTHORITY, AND DISTRIBUTION LIST

Job Title	*Responsibility*	*Manual Number*	*Controlled*
General Manager	Michael Castor	2	Yes
Plant Chemist	Melvin Pollard	1	Yes
Production Manager	Phillip Wright	4	Yes
Customer Service Manager	Karen Keffer	5	Yes
Acting Technical Director	John Marsh	7	Yes
"C" Team Leader	Jerry Fletcher	6	Yes
Plant Copy	Melvin Pollard	3	Yes

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CONTINGENCY PLAN AND EMERGENCY PREPAREDNESS & PREVENTION PROCEDURES

1. INTRODUCTION

1.1 Purpose: This plan is to be used in case of an emergency in which a spill of any hazardous material the Eastern Plating facility has occurred or has the potential to occur.

1.2 Scope: It contains the names of the personnel and institutions to be contacted, the equipment necessary to contain the spills and the procedures to be followed should a spill occur or an emergency arises in which a spill, or other hazardous material release could occur. This includes any events involving hazardous material releases at Eastern Plating Co., Inc.'s premises in which company, emergency personnel, or the community at large could be exposed to hazardous materials that have the potential to cause harm or detriment to human health.

1.3 Responsibility: The Plant Chemist has responsibility for the content and maintenance of this document.

2. EMERGENCY CONTACTS

2.1 Eastern Plating Emergency Coordinators

2.1.1 Jerry Fletcher, Production Supervisor
(410) 276-3920

2.1.1 Michael Castor, General Manager
(410) 308-8896;

2.1.2 Phillip Wright, Shop Manager
(410) 538-9917

2.1.3 Melvin Pollard
(410) 918-9189; (410) 375-9980 (cellular)

2.1.4 John Marsh, Technical Director, Consultant
(410) 984-5421 (cellular)

Emergency Service Organizations

2.2.1 General Emergency

2.2.1.1 Condition: Fire; Explosion; Chemical Spills Resulting in Evolution and/or Discharge of Hazardous Gas; Spills in Excess of the ability of Eastern Plating Personnel to Contain, Control and Remediate; or Personal Injury Requiring Para-Medic, Ambulance, or Rescue.

2.2.1.2 Contact:

Baltimore City Fire Department - Highlandtown
520 South Conkling Street
Baltimore, Maryland 21224
911

2.2.2 Spills Outside the Building

2.2.2.1 Condition: Spills Outside of the Building in Excess of 500 gallon process solutions which are corrosive, or 15 gallons of Chromic Acid Anodize, 40 gallons of Dichromate Seal or 80 gallons of Iridite Solutions

2.2.2.2 Contact:

Maryland Department of the Environment
Hazardous and Solid Waste Administration
2500 Broening Highway
Baltimore, Maryland 21224
Emergency: 8AM to 5PM: 1-800-633-6101
After 5PM, Weekends, Holidays: (410) 243-8700
Investigation Support Group: (410) 631-3400

2.2.3 Spills Inside the Building

2.2.3.1 Condition: Spill Inside the Building Where a Excess of 50 Gallons of Hazardous Chemicals Have Entered the Sanitary Sewer.

2.2.3.2 Contact:

Pollution Control Section
Bureau of Water and Waste Water
8201 Eastern Ave.
Baltimore, MD 21224
24 Hour Emergency: (410) 396-5352

2.2.4 Non-Critical Personal Injury

2.2.4.1 Condition: Personal Injury Requiring Medical Attention (not necessitating an ambulance)

2.2.4.2 Contact:

Physicians Prompt Care
1576 Merritt Blvd. Suite 2
Baltimore, MD 21222
(410) 282-8437

2.2.5 Poisoning or Suspected Poisoning by Ingestion

2.2.5.1 Condition: Poisoning or Suspected Poisoning by Ingestion

2.2.5.2 Contact:

Poison Control: 1-800-492-2414
Seek Immediate Medical Care if Required

2.2.6 Violent Crime

2.2.6.1 Condition: Criminal Activity of a Violent Nature, Real or Suspected that is transpire or has the potential to transpire on the premises.

2.2.6.2 Contact:

Southeast Police District
5200 Eastern Avenue
Baltimore, Maryland 21224
(410) 396-2422; 911

2.3. Interface with Emergency Personnel

2.3.1 Information to Present on the Phone:

2.3.1.1 Your Name

2.3.1.2 Company Name: **Eastern Plating Company**

2.3.1.3 Location:

1200 South Baylis St. (Between Elliott & Toone Streets) Baltimore City

2.3.1.4 Chemicals Involved:

If any chemicals are involved make certain that this information is provided:

Chemical Name, its Hazardous Components & its Characteristics.

Approximate Quantity of Chemicals Spilled

Is the Spill Contained and is there any Imminent Danger of a New or Expanded Spill.

Personal Injury Requiring Immediate Medical Attention

2.3.2 Example Response

"Hi, this is Mary Simpson. I am calling from Eastern Plating Company. The address here is 1200 South Baylis Street in Baltimore City. That is in the block between Elliott & Toone Streets. We have just had an accidental chemical spill that has resulted in a personal injury. A drum of MEK, that's methyl ethyl ketone, fell off the truck while we were unloading it and started to leak. When it feel the truck driver was injured badly: his leg looks like it is broken. He is conscious and alert. We have contained the spill with absorbent. MEK is a flammable solvent. Approximately 10 gallons has leaked out, but we captured it all with absorbent and we are currently placing it into drums. The drum is not leaking now, but the driver requires medical attention. Please send help."

2.3.3. Information to Have Available to Responding Emergency Personnel:

MSDS for appropriate chemicals if applicable.

The Plant Layout.

3. FLOOR PLAN OF EASTERN PLATING

Please find the floor plan for Eastern Plating Company, Inc. in Appendix I . It contains the Exit Locations, Fire Extinguisher Locations, Tank Layout, and the key locations which are referenced in Emergency Spill Procedures.

4. EMERGENCY EQUIPMENT

4.1. Fire Extinguishers

Five (5) fire extinguishers are located throughout the building at the following locations:

Front Entrance - to the right of the front door

MEK Stripping Area - on the yellow beam to the left of the MEK-Maskant Stripping Dip Tanks.

MEK Waste Storage Area - on the wall to the left of the MEK Waste Storage Area in the front of the building.

Chemical Process Area – (4) on the yellow beam behind Tank # 18; on yellow beam by restrooms; on the yellow by Tank #1; on the yellow beam by Tank 16 C.

Chemical Storage Area - on the wall by Wastewater Treatment Control Panel

Masking Room (2)

Degreasing Area (1)

4.2. Safety Equipment

Personal Safety Equipment can be found in the Personal Safety Kits. The kits are located on UPS shipping shelf and are to be worn by personnel during an emergency when necessary. Listed below are the contents of each kit.

Safety Goggles

Disposable Coveralls - Tyvek QC Coveralls

4.3 Spill Control Equipment

4.3.1. Two (2) Spill Control Equipment Storage Drums

are provided for use to contain accidental spills and to prevent toxic chemicals from being released into the environment or endangering lives. One drum is located in the front of the building (Baylis St. side) between the Carbon Dioxide Storage Tanks and the Waste MEK. The other drum is located in the Chemical Storage Area where the drums are stored. Each drum contains:

Absorbent - Absorption material loose and in mat form.

Absorbent-Filled Containment Socks

Shovels - Plastic scoop shovels are located in the drums.

Plastic Trash Bags (30 Gallon, Heavy Duty)

Chemical Labels

4.3.2 Pumps - two electric pumps can be found in the following locations:

4.3.2.1 High Speed Portable Horizontal Centrifugal Pump

This pump is located by the Chillers in the Chemical Storage/Mechanical Utility Room. Hoses can be found in Maintenance Area.

4.3.2.2 Drum Pump

The can be found in the Maintenance Area.

The 50 ft. X 1-1/4" nylon braided reinforced PVC Extension Hose is also located in the Maintenance Area.

4.3.3 Empty Storage Containers:

4.3.3.1 Empty five gallon pails are located throughout the shop.

4.3.3.2 Empty fifty-five gallon drums (closed-topped) are located in the Empty Drum Storage Area.

4.3.3.3 Open-Headed, 55 gallon drums which store the "Spill Control Equipment, can be used for the storage of sludge, used absorbent, and solid wastes, as well as liquids.

4.3.4 Wet & Dry Shop Vacuum: Located in Maintenance Area

4.3.5 Responsibility. The Plant Chemist shall be responsible for the specification, purchase, and maintenance of the above equipment. The Plant Chemist shall provide for monthly review of said equipment and shall ascertain and assure its readiness, adequacy and sufficiency.

5. PROCEDURES

5.1. Hazardous Material Spill

In the event of a Hazardous Material Spill, the following procedures are to be followed immediately to insure a safe and quick cleanup:

5.1.1 Notify the Environmental Emergency Coordinators listed above in Section II.

5.1.2 All individuals must put on appropriate Safety Equipment before working on the spill.

5.1.3 Contain the spill. Place absorbent socks around the perimeter of the spill area.

5.1.4 Use shop vacuum to vacuum up spilled material, or alternatively use bulk absorbent to absorb the spilled material and shovel or vacuum the absorbent/hazardous material into storage drums, buckets, or bags as appropriate. CAUTION: Do NOT use the vacuum for or around flammable liquids.

5.2. Leaking Containers

5.2.1 Leaking Tanks.

5.2.1.1 Notify the Emergency Coordinators listed above in Section 2.1.

5.2.1.2 All individuals must put on appropriate Safety Equipment before working on the spill.

5.2.1.3 Contain the spill. Place absorbent socks around the perimeter of the spill area.

5.2.1.4 Using the Drum Pump empty the nearest rinse tank of compatible construction. Pump the remaining solution from the tank into the empty rinse tank.

5.2.1.5 Clean up spilled material as outlined above

5.2.2 Leaking Drums

5.2.2.1 Notify one of the Environmental Emergency Coordinators listed above in Section II.

5.2.2.2 All individuals must put on appropriate Safety Equipment before working on the spill.

5.2.2.3 Contain the spill. Place absorbent socks around the perimeter of the spill area.

5.2.2.4 Transfer the contents to an empty drum constructed of compatible material. CAUTION: Do NOT use the electric drum pump for flammable material.

5.2.2.5 Clean up spilled material as outlined above.

Spills Leaving the Building.

If the spill has left the building, contact the following organizations given the following conditions:

5.3.1 Spills outside of the building in excess of the ability of Eastern Plating personnel to contain, control and remediate.

Contact:

Baltimore City Fire Department - Highlandtown

520 South Conkling Street

Baltimore, Maryland 21224

911

5.3.2 Spills Outside of the Building in Excess of 500 gallon process solutions which are corrosive, or 15 gallons of Chromic Acid Anodize, 40 gallons of Dichromate Seal or 80 gallons of Iridite Solutions

5.3.2.1 Contact:

Maryland Department of the Environment

Hazardous and Solid Waste Administration

2500 Broening Highway

Baltimore, Maryland 21224

Emergency:

8AM to 5PM: 1-800-633-6101

After 5PM, Weekends, Holidays: (410) 243-8700

Investigation Support Group: (410) 631-3400

5.3.2.2 Inform the office the following information:

A spill has occurred

What hazardous material is involved, its concentration; and its hazardous characteristics (refer to MSDS and Tank Chart if applicable).

The current status of the spill: whether it is contained, cleaned-up, or assistance is on the way.

Any other information regarding the nature and the status of the spill

5.3.3 If the spill has resulted in an **Excess of 50 Gallons of Hazardous Chemicals having entered the Sanitary Sewer:**

5.3.3.1 Contact:

Pollution Control Section
Bureau of Water and Waste Water
8201 Eastern Ave.
Baltimore, MD 21224
24 Hour Emergency: (410) 396-5352

5.3.3.2 Inform the office the following information:

A spill has occurred

From which tank the spill occurred

The current status of the spill: whether it is contained, cleaned-up, or assistance is on the way.

Any other information regarding the nature and the status of the spill

6. EVACUATION PLAN

6.1. Conditions which Invoke the Requirement for Evacuation

6.1.1 There is a fire in magnitude greater than what can be Contained, Controlled and Remediated by Eastern Plating Personnel.

6.1.2 A spill has occurred which has released toxic fumes into the plant.

6.1.3 An explosion has occurred.

6.2 Procedures for an Evacuation.

Should an Evacuation be necessary, follow the procedures below:

6.2.1 Emergency Coordinator(s) should initiate and coordinate the evacuation of practicable.

6.2.1.1 They should be contact 911 immediately and alert them as per above instructions.

6.2.1.2 Employees should be notified by intercom that they are to proceed to the emergency exits immediately and evacuate the building.

6.2.1.3 The MSDS/Emergency Response Book should be obtained and removed by the Emergency Coordinators(s)

6.2.2. Personnel should evacuate the premises via Emergency Exits

6.2.2.1 Two Emergency Exits are located at the front of the shop.

6.2.2.2 One Emergency Exit is located of the Mechanical Room on the North Alley side of the building.

6.2.3 Go to the nearest phone outside the shop and contact 911.

To locate the nearest phone outside of the shop, go to the following locations:

6.2.3.1 3424 Toone Street, Downstairs Office or Lab, then theUpstairs Apartment

6.2.3.2 Any of the neighbors on Toone or Elliott Street.

6.2.3.3 Pay Phone on the northwest corner of Elliott & Conkling Sts.

6.2.4 Assembly point is at 3424 Toone St. where all employees should assemble, subsequent to the order for evacuation.

6.2.5 Re-entry of the premises is not permitted until such time that the Emergency Coordinator In-Charge has received the "All Clear" from the Emergency Response Organizations.

AMASIA ENTERPRISES, INC.

2300 OAKMONT ROAD
FALLSTON, MARYLAND 21047
(410) 879-1362

HAZARD COMMUNICATION (29 CFR 1910.1200)

OUTLINE

I. REVIEW OF THE STANDARD

A) Chemical Manufacturers Responsibilities

B) Employer Responsibilities

C) MSDS Basics

D) Labeling Requirements

E) Education and Training

F) Written Hazard Communication and Chemical List - Company Specific

II. PRINCIPLES OF TOXICOLOGY

A) Toxicity vs. Hazard

B) What is a Hazardous Chemical

C) Degree of Hazard

D) Routes of Entry

E) Action of Toxic Substances

F) Body Defense Mechanisms

III. RECOGNITION & EVALUATION of HAZARDS

A) Types of Air Contaminants

B) Types of Hazards

C) Evaluation (Warning Properties and Measuring Exposure)

AMASIA ENTERPRISES, INC.

2300 OAKMONT ROAD
FALLSTON, MARYLAND 21047
(410) 879-1362

IV. OCCUPATIONAL HEALTH CONTROL METHODS

A) Sources

B) Pathways

C) Employee - Training, PPE, etc.

D) Self Protection - Employees Responsibility

V. MATERIAL SAFETY DATA SHEETS (MSDS)

A) Review of Company Specific MSDS

APPROXIMATE LENGTH OF TRAINING SESSION 2.5 HOURS

VIDEOs Utilized: 1. On-Site Right to Know Video

Handouts:

1. MSDS
2. AMASIA ENTERPRISES - Introduction to Right To Know and What Is A HAZARD MATERIAL ?

OUTLINE OF MAJOR PROGRAM POINTS

INTRODUCTION AND OVERVIEW

- **Purpose of "Right-To-Know" Laws**
  - To inform employees about potential chemical hazards.
  - To examine ways to protect employees from such hazards.
  - There are an abundance of "potentially hazardous chemicals" as defined by the laws.
  - Many "common" chemicals we use daily are considered "potentially hazardous".

- **Purpose of the Program**
  - Establish a better understanding of potentially hazardous chemicals in the workplace.
  - Examine why they are hazardous.
  - Look at how they can be used safely.

- **Intent of "Right-To-Know" Laws**
  - Provide employees with all necessary information about potentially hazardous chemicals.

- **Looking at the MSDS (Material Safety Data Sheet)**
  - Sections of information.
  - The chemical's uses.
  - The chemical's characteristics.
  - Potential hazards associated with the chemical.
  - First-aid procedures to use in case of accidents involving the chemical.
  - Spill and cleanup procedures.
  - Personal protective equipment.

- **Using a Chemical Labeling System**
  - Helps identify potential hazards.
  - Includes chemical name and synonyms.
  - Shows health and other hazards.
  - Should be placed on all containers of hazardous substances.
  - Can be placed on shelving or areas where chemicals are stored.
  - Also used on valves and pipelines.

- **Employee Education and Training is also a Major "Right-To-Know" Requirement**
  - Focuses on proper use, handling and storage of chemicals.
  - Makes employees aware of the chemicals used at their work site.

- **This Education Program Includes Information on a Number of Areas**
  - Chemical hazards.
  - Cautions to be observed when using chemicals.
  - Procedures involved in working with different types of chemicals.
  - Chemical labeling.
  - The importance of the MSDS.

- **Important Chemical Terms**
  - Duration of exposure; the time that you are exposed to a chemical hazard.
  - Acute effect; one that is caused by a short term exposure and happens suddenly.
  - Chronic effect; occurs after a long period of time, usually because of repeated exposure to a hazard.
  - Dose; the quantity of chemical hazard that you are exposed to.
  - Dose/Response; the relationship between the amount of hazard you are exposed to and the reaction you have as a result of that exposure.
  - Routes of Entry; the ways in which substances enter the body (skin contact, inhalation, or swallowing).

- **One Route of Entry is Through the Skin**
  - State of the chemical (solid, liquid or gas) is important.
  - Liquids, oils or "pastes" are most easily absorbed.
  - Skin provides a protective barrier.

- **Inhalation is also Common**
  - Lungs have no natural barrier.
  - Therefore inhalation is extremely dangerous.

- **Swallowing is the Third Route of Entry**
  - Occurs with contaminated food.
  - Also "hand to mouth" contact.

- o T.L.V. ("Threshold Limit Value) is an Important Hazard Indicator
  - Exposures beyond indicated amount increase likelihood of illness.
  - Exposures for longer then specified time increase likelihood of illness.
  - Usually given in "parts per million".

- o Important to Remember that Injury Occurs Only if Exposure is of Sufficient Intensity and Duration

TOXINS AND POISONS

- o A "Toxic" Substance has the Potential to Disrupt Physical Processes
  - Breathing
  - Coordination
  - Other bodily functions

- o Alcohol that We Drink is a Common Example of a Toxic Substance
  - Effects the respiratory system
  - Can disrupt kidney functions or messages from the brain.

- o Many Toxins Are Not Poisons
  - We tend to dismiss toxins, but they are still very dangerous.

- o Many Toxic Substances Can Be Found Around the House and in the Workplace
  - Pesticides
  - Cleaners
  - Solvents
  - Gases
  - Polymers
  - Fumes produced when burning, welding or heating metal.

- o A Poison is a Substance Which May Cause Severe Illness, or Even Death When Taken in Small Amounts
  - There are very few actual poisons.
  - Use in the workplace is limited.

- o Like Most Chemicals, Toxic Substances Can Be Beneficial When Used Properly
  - We are all exposed to toxins every day.
  - Most are not harmful since they are in small doses.
  - Both humans and animals can easily handle these doses.

- o Toxins Are Only Dangerous When They Overwhelm Our Natural Defensive Systems
  - Too large a dose.
  - Too long an exposure.

CORROSIVES AND IRRITANTS

- o Corrosives Are Often Found in the Form of Concentrated Acids or Bases
  - Sulfuric Acid is a corrosive acid.
  - Caustic Soda is a corrosive base.

- o These and Many Other Corrosive Chemicals are Commonly Used in Materials We Find in the Workplace Every Day
  - Dyes and paint products
  - Petroleum processing
  - Automobile batteries
  - Soaps and detergents
  - Water treatment

- o Body Contact with Corrosive Substances can have Potentially Damaging Effects
  - Skin contact may cause severe burns.
  - Eye contact could result in blindness.
  - Breathing dust, mist or fumes could cause lung damage.
  - Swallowing is rare, but could also cause severe injury.

- o Immediate First-Aid Minimizes Results of Exposure
  - Action must be taken quickly.

- o While Corrosives are "Concentrated Chemicals", Irritants Can Be Diluted Forms of Chemicals
  - Irritants are also often "by-products" generated during combustion of material.

- o Like Corrosives, Irritants are Found Throughout Our Lives
  - Nitrogen Dioxide (in the exhaust from engines)
  - Ammonia
  - Anti-freeze
  - Diluted acids
  - Degreasers
  - Thinners

- o Irritants Most Often Cause Inflammation
  - "Localized" irritation at point of body contact.

- In concentrations much less than cause corrosive effects.

o Be Familiar with Corrosive or Irritant Chemicals to Guard Against Burns or Inflammation
  - Those used every day.
  - Those used during equipment maintenance or overhaul.

FLAMMABLES AND COMBUSTIBLES

o Flammable and Combustible Chemicals are also Common to Most Facilities
  - Gasoline
  - Kerosene
  - Xylene
  - Acetylene
  - Toluene
  - Alcohol

o These Chemicals are also Found in Common Products and Supplies
  - Welding supplies
  - Paints
  - Sealers

o There are a Number of Flammable Gasses as Well
  - Hydrogen
  - Methane
  - Butane
  - Propane

o Most Flammable Gases are Stored in Compressed Forms as Liquids
  - Return to gas when released.
  - Release causes rapid expansion, which allows for burning.

o "Flashpoint" Determines Whether Something is Flammable or Combustible
  - Flashpoint equals the temperature at which a chemical produces <u>vapor</u> that will burn.

o Flammables Give Off Vapors at Relatively Low Temperatures
  - Gasoline at -45° Fahrenheit

o Combustibles Produce Vapors at Higher Temperatures
  - Kerosene equals 100° Fahrenheit

- Combustibles must be heated before they will produce vapors that will burn.
- Provides for much more "control" over burning.

o SWITCHING A FLAMMABLE (SUCH AS GASOLINE) AND A COMBUSTIBLE (SUCH AS KEROSENE) CAN HAVE DISASTROUS RESULTS

o PRINCIPLE HAZARDS ASSOCIATED WITH FLAMMABLES AND COMBUSTIBLES ARE "PHYSICAL"
- Ignite easily
- Burn rapidly
- Explode

o FLAMMABLES AND COMBUSTIBLES CAN ALSO POSE OTHER HEALTH HAZARDS
- Produce toxic vapors

o LOOKING AT COMPRESSED GASES IN MORE DETAIL
- Present fire or explosion hazards.
- Pressure is a strong physical force.
- Rupture of a cylinder or valve can create flying projectiles.

RADIATION

o THE MOST COMMON RADIATION HAZARD IN MANY WORKPLACE'S IS ULTRAVIOLET RADIATION
- Created by arcs or torches.
- Can change the structure of atoms and harm living tissue or organs.

o ANOTHER RADIATION HAZARD IS "INFRA-RED" RADIATION
- Given off by heating elements.
- Primary hazard is heating of body tissue .
- Nerves in the skin provide warning (pain).

o EYE AREAS ARE PARTICULARLY VULNERABLE TO RADIATION DAMAGE
- No pain cells to provide warning.
- Few blood vessels to "repair" damage.
- Radiation may create cataracts.
- "Welders' flash" of intense ultraviolet light can cause blindness.

CARCINOGENS, MUTAGENS AND TERATAGENS

o SEVERAL FAMILIES OF CHEMICALS HAVE HAZARDS DIFFERENT FROM MOST
- Ways that they effect the human body.

- Amount of time it takes to detect effects (months, years or longer).
- These chemicals are called Carcinogens, Mutagens and Teratagens.

o **These Chemicals Affect the Way Cell Growth Occurs**
  - Carcinogens and Mutagens damage the pattern of cell growth.
  - Teratagens cause "damaged" patterns to be passed on to children, resulting in birth defects.

o **Asbestos is a Well Known Carcinogen**
  - Use for insulation and fireproofing for years.
  - In automotive brake and clutch linings.
  - Breathing asbestos fibers can cause various types of cancer.

o **Other Confirmed Cancer Causing Materials are Well Known to Us**
  - Vinyl chloride
  - Uranium
  - Chromium
  - Nickel

o **Some Chemicals have Not Shown a "Direct Link" to Cancer**
  - Test results in animals causes them to be "suspect".
  - Are called "Suspected Carcinogens".
  - Include formaldehyde, PCVs and carbon tetrachloride.

o **Identifying These Hazards is Done Two Ways**
  - Studying people who have been exposed.
  - Animal Experiments

o **The "Dose" of the Chemical Which has been Received is Important in Determining the Hazard**
  - Dose means "exposure".
  - Studies find high exposure to carcinogenic chemicals poses "far greater" risks than lower doses.

o **These Chemicals Enter the Body in the Same Way as Other Chemicals**
  - Skin absorption
  - Swallowing
  - Breathing (the most common)

- o Fumes from these Chemicals Most Frequently Attack Several Organs
  - Lungs
  - Liver
  - Kidney
  - Reproductive system

- o Many Factors may Influence the Development of Cancer
  - Interrelations of these factors are not completely understood.
  - A number things can be done to reduce cancer hazards.

- o Several Major "Contributing Factors" are Not Work Related
  - Cigarette Smoking (Greatest single cancer hazard.)
  - Diet
  - Have been shown to greatly increase other cancer hazards.

- o Regular Check-ups by Your Doctor are Extremely Important in Early Problem Detection

STORAGE AND HANDLING

- o With Proper Knowledge and Protection, Chemical Hazards are Greatly Reduced
  - Learn what hazardous materials are present.
  - Approach them with proper attitude and awareness.

- o Look for Information about the Chemicals on the Container Label
  - Chemical's characteristics and hazards.
  - Personal protective equipment to be used.
  - Handling instructions.

- o If the Label Doesn't Provide All Needed Information, Consult Material Safety Data Sheets (MSDS)

- o Always Use Proper Protective Equipment
  - Safety Glasses, Goggles and Face Shields
  - Gloves and other Protective Clothing
  - Respiratory Protection

- o Proper Ventilation is also Extremely Important

- o Care must be Taken When Storing Potentially Hazardous Chemicals
  - Provide proper ventilation
  - Ensure proper lighting
  - Identify all storage locations

- Provide strong and stable shelving (also corrosion resistant)
- Arrange aisles for safe access

o **Special Storage Containers Should also be Used with some Chemicals**
- Small quantities of flammable/combustible materials should be stored in UL cans.
- Containers should be stored in approved flammable material storage cabinets.
- Store compressed gas in cool, dry, well-ventilated areas (away from heat or ignition).

o **Always Know Where Fire Extinguishers are Located**
- Also how to use them.

FIRST-AID

o **Medical Professionals are the Ultimate Source of Knowledge about Contact with Chemicals**
- You should also know as much as possible about any chemical contacted, (can assist medical personnel).

o **Any Employee can help Prevent Serious Injury and Save Lives with Proper Knowledge of Chemicals and How to Handle Them**
- Know location of running water (first line of defense).

o **For Chemical Contact with Eyes**
- Flush with running water for at least 15 minutes.
- Get proper medical attention.
- Avoid wearing contact lenses (substances may become trapped).

o **For Skin Contact with Potentially Hazardous Chemicals**
- Remove all contaminated clothing.
- Wash exposed areas thoroughly with soap and water.
- Get medical attention.

o **If Someone Breathes in a Hazardous Chemical**
- Remove person to fresh air at once.
- Restore normal breathing.
- Keep person warm and at rest.
- Get medical attention.

o **If Hazardous Materials have been Swallowed**
- Always consult MSDS first.

- May need to dilute chemical with water or milk.
- Or may need to induce vomiting.

o **If Someone is Burned**
  - Make sure fire is out (smother flames with extinguisher or blanket).
  - Cool person with clear water.
  - Wrap in clean sheets.
  - Keep victim calm.
  - Get medical attention.

o **In any Chemical Incident the Most Valuable Employee is One Who Knows What to Do**
  - Know where your "Emergency Plan" is.
  - Know where Material Safety Data Sheets are located.
  - First concern in any incident is health and safety of people.
  - Deal with injuries requiring immediate treatment.
  - Notify proper personnel.
  - Evacuate area if necessary.

CONCLUSION

o **Dealing with Spills or Leaks are Special Concerns**
  - Try and protect the environment.
  - Keep chemicals from flowing into drainage or sewer systems.
  - If spilled materials are flammable or combustible remove sources of heat/ignition.
  - Always protect yourself against contact with spilled substances.
  - Use no tools that create sparks, heat or flames.
  - For liquid spills use absorbent solid to soak up spill.
  - Some chemicals may have to be removed by a licensed disposal company.

o **Although Chemicals are Part of Our Everyday World, They can Present Hazards**

o **Knowing How and Where to Find Chemical Information, and What to Do in Event of a Problem will Help Everyone Work with Chemicals Safely**

WHAT IS A "HAZARDOUS " MATERIAL?

Hazardous materials are substances that have the POTENTIAL to cause injury or illness. However, when these materials are properly controlled and handled they can be used safely.

There are a number of ways to minimize the potential dangers

1. Read and follow the label information on the containers
2. Use available engineering controls - hoods, general and mechanical ventilation, control of dust by wetting-down the material
3. Use of proper personal protective equipment.
4. Good knowledge of the specific hazards of the material.
5. Knowledge and use of proper handling, storage, processing, and disposal procedures.
6. Knowledge of any possible health effects and first aid procedures.

All of this information is available on the labels and the Material Safety Data Sheets (MSDS).

A material is considered to be hazardous by definition of its FLAMMABILITY (100° or less); COMBUSTIBILITY (flash point of 100°F to 200°F); CORROSIVITY (acid or base/caustic); TOXICITY (damage to body parts or organs thru absorption, inhalation, ingestion ; or REACTIVITY (unstable materials that may release heat, energy under contact with water, specific other chemicals, high temperatures, etc.)

Many hazardous materials are used everyday around the home, for example:

FLAMMABLES: Gasoline; De-Icer; Isopropal Alcohol; Methanol; Gasoline Octane Improvers such as Toluene, Xylene and Paints and Thinners.

COMBUSTIBLES: Fuel Oil, Motor Oils

HALOGENATED SOLVENTS: "Chlorinated Solvents" such as Gumout carburetor cleaner, White-out for correcting typing mistakes, Parts cleaners or degreasers, Spot Removers and dry cleaning chemicals.

ACIDS AND CAUSTICS: Drain cleaners such as sodium hydroxide, potassium hydroxide, sulfuric acid.

TOXICS: Herbicides (weed killers), Insecticides (flea collars, flea sprays)

COMPRESSED GASES: Propane tanks, Oxygen tanks, Welding equipment tanks.

The key to safety is PROPER USE - IN A PROPER AREA (ventilation) WITH THE PROPER SAFETY PROTECTIVE GEAR (goggles, gloves, respirators, aprons, etc.)

ROUTES OF EXPOSURE
AND
EXPOSURE CONTROLS

Chemicals can enter the body by any one or a combination of three routes: Inhalation of dust, mist, fumes or vapors through breathing in areas that do not have proper ventilation controls; Ingestion through contamination of food, improper handwashing, etc.; Absorption through the skin by exposure to chemicals without using proper safety gear required (i.e., impermeable gloves, aprons, etc.)

Exposure controls should include general ventilation, specific mechanical ventilation including work area hoods, venting units (tubes) in work areas, etc.

Eye Protection requires specific types of equipment depending on the particular chemical being used, type of operation, etc. Sparks, harmful rays and hot molten metal are hazards of acetylene burning, cutting and welding. Fumes and splash burns may result in chemical handling. Chipping, grinding machining and spot welding often create sparks and flying particles. Often face shields alone do not provide adequate protection. For maximum safety employees should always check with the firm's safety department.

If there is a high level of noise in the work area steps must be taken for hearing conservation. Symptons such as a prolonged ringing or other unusual noises after leaving work; trouble hearing the television or speech with normal hearing returning after a few hours off the job are signs of over-exposure to too much noise. These signs should be discussed with the firm's Safety Manager. Ear plugs, ear muffs and/or similar protection may be warranted. Specific training and audiometric testing procedures may need to be implemented.

If mechanical hazards are present hand protection may be required. Cutting, crushing, puncture and "pinch" hazards can be avoided with proper procedures. Gloves can also protect employees from environmental hazards such as heat, cold, chemicals, electrical and rough materials. The proper glove type for the job must be used however, some materials will not give any protection to certain chemicals. In most cases, the Safety Manager should be consulted. Common sense and good practices should be used in all cases. These include:

1. Cleaning your hands

2. Use of approved cleaners
3. Use of proper gloves
4. Following good housekeeping rules
5. Use of barrier creams and skin "fats and oils" creams to help prevent dermatitis
6. Use of boots, heavy aprons and special fabric clothing can also protect skin and limit any absorbtion.

Ingestion of hazardous materials can be avoided by:

1. Not using chemical containers for food or drink
2. Washing of hands before eating
3. Prohibiting eating and smoking in areas where chemicals are stored or handled
4. Eating only in designated areas
5. Prohibiting storage of food in refrigerators normally used to store chemicals

Protect yourself - become familiar with all the first aid procedures for the chemicals in your area. Report any and all injuries to the Safety Manager.

Inhalation protection may require the use of some form of respirator. This may be needed due to dust particles, mist, fumes or vapors. A respirator can prevent lung and respiratory diseases, cancer and other serious illnesses. Decisions for use of a respirator are based on the following:

1. The exposure limits allowed for the particular contaminant in the area (this information can be found on the MSDS)
2. Scientific measurements of the hazard level in a specific area

If in doubt, wear a respirator. The safety department will be preparing a detailed trainipg, fit testing, basis for selection, etc. to provide a good industrial respirator protection plan. Remember, only a self-contained breathing unit (Air Supply tanks) can be used if the oxygen content is below 19.5 percent by volume, or if the atmosphere is IDLH (Immediately Dangerous To Life and Health). Not everyone can wear a respirator. Individuals with respiratory problems, i.e., asthma, severe allergies or emphyzema and circulatory problems such as high blood pressure or heat disorders should notify plant supervisors and should be checked by a physician.

HANDLING CHEMICALS SAFELY

If properly handled any hazardous material (toxic chemicals, flammable liquids, dangerous gases or corrosives) is safe. Proper handling prevents accute or chronic effects.

General rules to prevent accidental exposure include:

1. Know what is being handled
2. Use of personal protective equipment
3. Practice of good personal hygiene measures and good plant housekeeping
4. Knowledge of and obeying all safety rules

The MSDS and container labels carry information for identification of the materials and safety instructions.

Flammable and combustible liquids require the following:

1. Keep each such material separate - never mix without approval of supervisory personnel
2. Use of safety glasses, goggles or gloves plus any other needed protective gear such as respirators, gloves, coveralls, boots, and similar items
3. Use and inspection of safety cans
4. No smoking
5. Careful dispensing - use of electrical bonding and grounding to avoid a static spark

Examples of such materials include gasoline, methyl alcohol, isopropal alcohol, toluene, xylene, methyl ethyl ketone, many paints, etc.

Compressed gases require basic precautions which include:

1. Strict observance of all company standards and rules
2. Knowledge of the gases used in the work area
3. Secure cylinders kept in an upright position at all times
4. Cylinders located away from fire, sparks and electricity
5. Sagety in moving cylinders - no dropping or use of rollers or supports. Use hand trucks with cylinders chained
6. Valve caps in place when storing empty cylinders
7. Work area kept clean
8. Keep oxygen and flammable gases (methane, propane, hydrogen, acetylene) separate

Guidelines for safe compressed gas use include:

1. Make sure label is able to be read

2. Hoses and connections checked
3. Caps securely screwed down
4. Open valves slowly - never force threaded connections, never use a wrench or hammer to open valves with handwheels
5. Never use compressed gas to clean a work area or to dust off clothing
6. Mark empty cylinders with an "MT" and store away from full cylinders
7. Use of proper regulators for the gas type

Acids and Bases are used for etching neutralization and similar work. Common acids include phosphoric, nitric, sulfuric, chromic and hydrochloric. Some common bases "caustics" include sodium hydroxide, potassium hydroxide. Both acids and bases are highly corrosive and will irritate or burn the skin, eyes and respiratory tract if not used properly. The concentration of the solution is extremely important in determining the hazard.

Acids react with caustics to form vapors, heat and sometimes sludge. Some acids can react violently with water (sulfuric acid). Both attack specific metals and can be reactive to may other chemicals.

Contact with these materials can cause dermatitis, burns, bronchitis, pulmonary edema, etc. General guidelines for safe handling include:

1. Proper ventilation in the work area
2. Wearing appropriate protective equipment - rubber gloves, aprons, safety glasses, face shields
3. Use of appropriate respirators if required
4. Immediate clean-up of any spills
5. Storage of materials in separate areas (acids away from bases, solvents and certain other toxics.)
6. ALWAYS ADD ACID TO WATER - NOT WATER TO ACID ... AND DO THIS S-L- O-W-L-Y

SOLVENTS

Safe handling of a solvent requires an understanding of the material. A solvent is any liquid that can dissolve another substance. Solvents are used in industry as thinners and as grease and dirt dissolvers. At home they are used as spot removers, paint thinners, glues, dry cleaning agents, etc.

Organic solvents include two classes: Flammables, such as Acetone, Benzene, Xylene, Methyl Ethyl Ketone, Gasoline, etc. and Halogenated (chlorinated) solvents, carbon tetrachloride, trichlorethylene, perchlorethylene and methylene chloride.

How hazardous a solvent is depends on - How it is used - How toxic it is - How much vapor is given off - Where it is used - Length of exposure - How susceptible an individual is to the solvent

Solvents enter the body by inhalation and absorbtion (skin contact). Many are very quickly absorbed into the bloodstream and can cause drowsiness, dizziness, headache and coordination problems. Acute inhalation can irritate the nose, throat, eyes and lungs. Chronic inhalation may damage the lungs, blood, liver, kidneys, and even the digestive system. SKIN contact can cause dermatitis through defatting.

Protection can be maintained by use of:

1. Non-porous gloves
2. Barrier creams
3. Never use a solvent to wash hands, etc.
4. Use of an approved respirator when necessary ... as well as safety glasses, goggles and/or shields as required

FIRST AID FOR HAZARDOUS MATERIALS

Every second counts! Immediate First Aid will reduce pain, improve chances of recovery and help to prevent complications.

Chemical Burns: Chemical burns usually involve no heat. They are caused by acids, caustics and some other hazardous chemicals, including oxidizing agents. Severity of chemical burns depends on several factors such as:

Depth of burned tissue
Location of burn
Size of burn
Chemical involved
Duration of contact
Age and physical condition

DO

1) Wash area immediately for 15 to 20 minutes
2) Remove all contaminated clothing
3) Cover burn with sterile dressing
4) Get medical help immediately
5) Know where safety shower is located

DON'T

1) Apply any neutralizing solution
2) Apply ointments
3) Give depressants or stimulants

For internal chemical burns caused by inhalation or ingestion follow the specific information given on the MSDS and get medical help immediately. Always call the local Poison Control Center and send along a copy of the MSDS to the hospital.

Eye injuries require immediate attention. Flush for at least 15 minutes, cover affected eye and send for emergency treatment.

Watch for complications such as shock and infection. Remember proper knowledge of the material, proper safety equipment and work areas can prevent chemical burns.

Basic First Aid:

Ingestion: See specific MSDS recommendation, contact poison control center, get immediate emergency help

Inhalation: Move person to fresh air, give oxygen or CPR as required, get immediate help

Absorbtion: Remove contaminated clothing, wash with soap and water for 15 minutes, see a doctor. Skin cream may help prevent dermatitus

Eye Contact: Flush for 15 minutes. Get immediate medical help.

Use of all safety gear and emergency equipment requires training. Quick response requires a good working knowledge of how a safety shower/eye wash station works, how to properly use a fire blanket, fire extinguisher, fire hose, etc. Review of the Emergency Response, Evacuation, Spill Control Plan should be completed on a regular basis by all employees.

NEVER TAKE CHANCES:

1) Observe all safety procedures
2) Know what is being used... Follow information on labels and in the MSDS
3) Use personal protective gear
4) Keep work area and body clean and free of dust debris, etc.
5) Report any potential problem to area supervisor
6) Become familiar with all safety emergency response procedures

WELDING SAFETY

Welding safety is protecting an individual's person and property. Welding is a common operation in many plants and includes types such as: Oxygen-Acetylene - Gas metal and gas tungsten arc welding - Brazing - Shielded metal arc welding, etc.

Some possible hazards that welders face include:

1) Light rays
2) Fumes and gases
3) Hot metal and sparks
4) Noise
5) Electrical shock

Control welding and cutting hazards through these steps:

1) Maintain safe work practices
2) Use of only approved equipment that is in good condition
3) Regular inspection of all connections and grounding before beginning work
4) Following the manufacturer's instructions
5) Inspection of work area for fire, explosion, electrical, toxic gas and tripping hazards before work begins
6) Never wear flammable materials
7) Keeping fire extinguishers handy
8) Proper disposal of electrode stubs or rods
9) Proper storage of tools and equipment

Personal protective equipment includes:

1) Eye protection to prevent flash burns, sparks, heat
2) Protective clothing made of leather or other strong flameproof fabric
3) Safety shoes or leather spats or leggings over shoes
4) Use of respirators if necessary to protect from metal fumes, some paints, cleaning compounds and welding rod coatings

Metal fume fever caused by breathing fumes may include the following symptoms:

1) Metallic taste in the mouth
2) Dry nose and throat
3) Weakness or fatigue
4) Joint and muscle pain
5) Fever or chills
6) Nausea

SEE YOUR SUPERVISOR IMMEDIATELY IF YOU NOTICE THESE OR OTHER UNUSAL SYMPTONS

General safety rules include:

1) Avoid breathing fumes and gases
2) Read and obey all labels and markings
3) Set-up protective screens so ventilation is not blocked
4) Weld only in well-ventilated areas...use ventilation and/or exhaust at the welding arc to remove fumes and gases
5) When outdoors weld upwind of fumes and gases
6) When welding in a confined space full OSHA compliance is required including O2/explosion meter test, safety man, CPR training, specific ventilation and respirator requirements

Prevent fires and explosions through:

1) Posting of fire watch
2) Keep Class ABC extinguishers available
3) Cover sewers
4) Handling compressed gases properly
5) Never weld around flammable or combustible materials
6) Contacting supervisor if propane, acetyline or other flammable vapors are noticed
7) Do not cut or weld on used or empty containers until they have been thoroughly cleaned, purged and vented
8) Follow proper compressed gas cylinder safety regulations

PROPER STORAGE OF HAZARDOUS MATERIALS

General safety rules:

Store chemicals in their original containers if possible

Make sure all labels are in place and clearly visible

Store incompatible chemicals in separate storage areas (oxygen and flammables, oxidizers and solvents, acids and cyanides)

Store chemicals in properly consturcted and approved areas only

Store chemical waste in properly labeled containers and special storage areas only

General guidelines for safe storage include:

1) Avoid direct sunlight, high heat and sources if ignition
2) Keep area clean, dry, cool and provide good ventilation
3) Store chemicals by hazard potential (peroxide forming compounds should show an expiration date)
4) Strong oxidizers should be separated from other chemicals
5) Flammables should be stored in special safety containers, cabinets or other special storage areas
6) MSDS should be readily available
7) Do not store food with chemicals

CHEMICAL SAFETY - GLOSSARY OF TERMS

Absorption: passing through the skin

Acute effects: immediate, usually within 24 hours

Autoignition temperature: the temperature a substance must be to catch fire without spark or flame

Cartinogen: cancer producing

Chronic effects: may not show up for many years or may last over a long period of time

Corrosives: burn or cut off the oxygen or blood supply to the skin. Strong acids like sulfuric acid, hydrochloric acid with pH of less than 2.0. Strong caustics, alkalines, bases with pH of greater than 12.5.

Dermatitis: irritation or inflammation of the skin

Evaporation rate: how fast a chemical changes from a liquid to a vapor. (Compared to butylacetate)

Fire classes and their extinguishing agents:

Class A - ordinary combustibles, water

Class B - flammable liquids, carbon dioxide, dry chemical or halon

Class C - electrical, carbon dioxide, dry chemical or halon

Class D - combustible metals such as lithium, sodium, potassium - special agents

Flammable limits in air: the leanest and richest gas or vapor/air mixture that can be ignited by spark or flame

Flash point: the temperature at which enough vapor is present to catch on fire when a flame or spark is passed above it

Incompatibility: not to be stored or mixed together

Ingestion: swallowing

Inhalation: breathing of dust, mist, fumes, and vapors

Narcosis: stupor or unconsciousness

Permissable Exposure Limit (PEL) or Threshold Limit Value (TLV): an exposure level below which most people can work day after day with no harmful effects

Peroxides: unstable, can cause explosion

Polymerization: uncontrolled reaction that releases heat to start fires or keep them going

Pulmonary: lungs and breathing

Pyrophoric chemicals: catch fire by themselves

Respirators: units that filter or absorb chemicals in the air or supply air from an independent source

Sensitizers: can cause an allergic reaction

Solubility in water: the ability of a substance to dissolve "mix" in water

Stability: resistance to react with other materials and become more hazardous

Vapor density: the weight of a gas compared to the weight of an equal amount of air. Gases with a vapor density greater than one, will settle "be close to the ground", those less than one will rise

Vapor pressure: the pressure of a vapor above a liquid

Questions to ask about the chemical:

1) Do I have the right chemical?
2) What are its' hazards, if any?
3) What will cause it to react?
4) How can I protect myself from it? Good ventilation, proper safety gear, etc.
5) Has the substance changed since the last time I used it? Color, odor, number of layers, etc.
6) Where will I find potentially hazardous situations?
7) Where are the emergency facilities? Eyewash/safety shower, fire extinguisher, alarm, etc.
8) Is there a safer chemical that can be substituted?

Hazard Communication

EMPLOYEE TRAINING

DETECTING CHEMICAL RELEASES
HAZARDS OF ALL CHEMICALS
PERSONAL PROTECTION
WRITTEN HAZCOM PROGRAM
LABELING AND MSDS

CHEMICAL HAZARDS

PHYSICAL HAZARDS
SUCH AS FLAMMABLE OR
EXPLOSIVE CHEMICALS

HEALTH HAZARDS
SUCH AS REPRODUCTIVE
TOXICANTS AND CARCINOGENS

LABELS

REQUIRED ON ALL HAZARDOUS
MATERIAL CONTAINERS

MUST IDENTIFY THE MATERIAL
AND LIST PHYSICAL AND
HEALTH HAZARDS

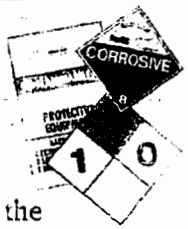
MSDS

DETAILED INFORMATION ABOUT THE
MATERIAL, ITS HAZARDS AND
HOW TO CONTROL THEM

MUST BE READILY AVAILABLE
TO WORKERS

CONTENTS

ITRODUCTION



OP! CAUTION! HAZARD!

ıen you drive, messages like these warn you of dangers on the ıd ahead. Your workplace also has potential dangers, but you can stay on ı road to safety by following the requirements of the Occupational Safety ł Health Administration's Hazard Communication Standard. By reading rning labels, using Material Safety Data Sheets and asking your pervisor for directions, you will be able to stay on the safe road.

ıt as you may see drivers on the highway ignoring warning signs or taking ngerous shortcuts, people ignore the guidelines of the Hazard mmunication Standard. In fact, the HazCom Standard, which requires ur employer to inform you of potential hazards in your workplace, ntinues to be one of OSHA's most-violated standards year after year.

ıis handbook details the training requirements of the HazCom standard, plains various physical and health hazards, and teaches you how to use ırning labels and MSDSs properly.

HAZARDS OF CHEMICALS

Chemicals are a necessity at home and on the job, but using them unsafely can lead to injury or even death. Chemicals pose physical hazards or health hazards — although they can be both.

- **Physical hazards** act outside the body to produce a dangerous situation. Flammable or explosive chemicals pose physical hazards.

- **Health hazards** cause damage such as stomachaches, nausea and even reproductive damage. Health hazards can be either acute or chronic.

  Acute health hazards occur after a short period of exposure and their damage happens quickly. A chemical leak causing respiratory problems is one example of an acute health hazard.

  Chronic health hazards occur gradually over time. Examples of these are carcinogens and reproductive toxicants.

RAINING REQUIREMENTS

st as the government is required to warn you of what lies ıead on the roads you drive, under HazCom, your employer ust inform you of the hazards at your workplace by:

Identifying and creating a list of potentially hazardous materials you may encounter. Whether they're produced at your workplace or imported, these materials must be identified with warning labels and MSDSs.

Informing you of any operations in your work area where hazardous materials are present.

Explaining methods and observations that may be used to detect the presence or release of a hazardous chemical. One such method, for example, is monitoring.

Informing you of ways to protect yourself using safe work practices, emergency procedures, and personal protective equipment (PPE).

Informing you of the location and availability of your employer's written Hazard Communication Program — including the details of the program, an explanation of the labeling system, MSDSs, and how to use this information effectively.

our training will be pdated whenever a ew material is ıtroduced into the 'orkplace and 'henever any hazard egarding a material hanges.

lemember, you may be ıterviewed during an udit or OSHA ıspection to determine f your employer is ıroviding adequate raining. You must be ible to show that you ıave a basic ınderstanding of the ıotential dangers of the hemicals in your vorkplace.

WARNING LABELS

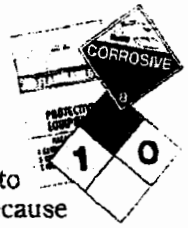
Just like a stop sign on the road, a label on a chemical container will give you important warnings about potential hazards. But sometimes labels provide little information or there may be no label at all. If this happens to you, remember to use common sense:

- Never mix chemicals that aren't properly labeled.
- Never assume an unlabeled container is harmless just because it isn't labeled.
- Never remove a label unless you immediately replace it with another one.

For your safety, your employer ensures that labels are attached to almost every hazardous material in your workplace. The labels will be legible, prominently displayed, and include the following information:

- The identity or name of the chemical
- The appropriate hazard warnings such as FLAMMABLE or EXPLOSIVE
- The name and address of the chemical manufacturer, importer or other responsible party.

If any of this information changes, your employer will make sure that the labels are updated.

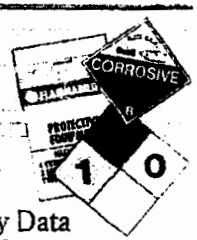


In some instances, labels aren't required. For example:

- Pipes are not considered "containers," so they do not have to be labeled. Don't assume the chemical inside is safe just because there is no label.
- Portable containers don't have to be labeled if the chemicals inside were transferred from a labeled container and immediately used by the employee who transferred them. So never leave an unmarked container of a hazardous material unattended.
- Individual process containers can be marked with other signs, placards, process sheets, batch tickets, operating procedures, or other written forms — instead of labels — but only under two conditions:
  - The placard or other written method must identify which containers the warnings refer to.
  - The written method used must contain the same information that would be on a warning label, such as the physical and health hazards.

Like signs on the road, labels point you in the right direction and keep you from being hurt. Don't ignore them.

MATERIAL SAFETY DATA SHEETS



If you're on the road and become lost or confused, you might refer to a map for help. When you're at work and you need more detailed information, you should consult Material Safety Data Sheets (MSDSs). In fact, your employer will provide MSDSs for every hazardous chemical with which you work and make sure they are readily accessible during each work shift.

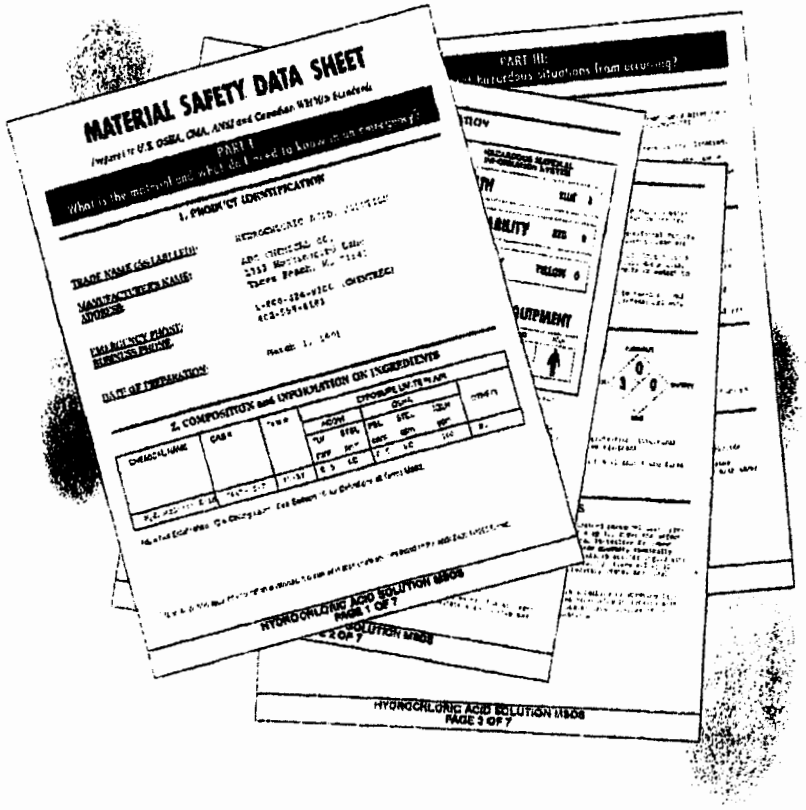
Although MSDSs probably contain everything you will want to know about the safe handling of a material, they can be frustrating to use. You can overcome this frustration by remembering that there are four main categories of information in the MSDS: product information, exposure situations, hazard prevention and protection, and other specific information. Your company's MSDSs may not be in the same format, but the principles for using an MSDS are the same.

ound in the beginning of the MSDS, the product information ection includes:

Basic information about the material:

- Its name (keep in mind that the chemical name will be the same as the one on the label, although other names may also be listed)
- The manufacturer's name, address and telephone number
- The preparation date or date of last revision
- Emergency telephone numbers, usually.

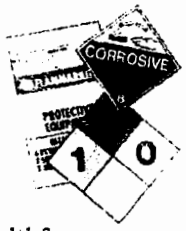
The ingredients of the material and their hazards, unless the ingredients are trade secrets. In that case, only the hazards will be listed.



Specific exposure limits:

- Permissible exposure limit (PEL)
- Threshold limit value (TLV)
- Short-term exposure limit (STEL).

The PEL and TLV are maximum concentrations of the substance that you can be exposed to averaged over an eight-hour workday. The STEL is the acceptable amount of a substance you can be exposed to over a 15-minute period.



Potential physical and health hazards. This section will answer questions such as:

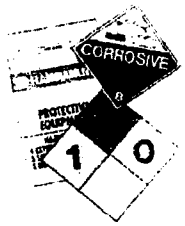
- Is the material flammable, corrosive, or toxic?
- How can the hazards enter the body and affect your health?

This section tells you what to do in the event of an accidental exposure. Specifically, this section lists:

- First-aid measures
- Response procedures for spills or leaks
- Fire-fighting measures (including any unusual fire or explosion hazards).

The fire-fighting section will include information such as the flash point, autoignition temperature, flammable limits, lower explosive limit (LEL) and upper explosive limit (UEL).

One final topic covered is accidental release measures for spills or leaks, which includes cleanup methods. This section is primarily for those trained to respond to emergency spills.



e MSDS provides instructions on how to safely handle and re materials. If you follow these directions, you can:
Minimize your direct contact with hazardous materials
Reduce fire hazards or other reactions
Prevent releases of hazardous materials
Learn conditions (such as excessive heat, direct sunlight, or vibration) to avoid when storing chemicals.

Additional topics covered include:

- Engineering controls, such as ventilation
- Personal protective equipment, or PPE
- Physical and chemical properties:
  - Appearance
  - Evaporation rate
  - Melting and boiling points.
- Stability or instability of the material
- Conditions and other materials that can cause dangerous reactions with the chemical
- Hazardous substances that may be released when the material decomposes.

Other information on the MSDS — toxicological, ecological, disposal, transportation, and regulatory information — is typically needed by specialists, such as emergency responders, physicians, or toxicologists.